

BCDA Activities – August 04

Highlights

- Our lab has moved from the third floor to room L1111 on the first floor. It is now closer to the rest of the group and to users.
- The “Getting Started with EPICS” lecture series kicked off this month. The group is heavily involved with presenting lectures and organizing the program.
- Interviews were held for the vacant EPICS application developer position.

Specific beamline/XOR support

XOR-1:

- Met with Jan Ilavsky in sector 1 regarding updates he would like to have done to the 1bm user interface. He will make a task list for the work which he wants to begin in Sept.
- Met with Ali and Yujie about motion controls support for a new monochromator that is being installed in 1-BM-B. This mono will be installed and tested in the next run.
- Began working on EPICS motor record device support for the new tomography system's motor driver. They had the wrong driver for their application. The right one is on its way.

XOR-2

- Designed a custom cable to allow their piezos to be driven by standard motion controls. Gave schematic to Pete Fuesz for fabrication.
- Installed CCD Image Server on a backup computer for sector 2 after their primary computer failed.
- Helped Chris Roehrig with a control program for the Aerotech U500 stage system. This is basically a revival of a program I wrote a long time ago.

XOR-3:

- Resolved problem with GPIB encoders. Numerous tweaks to displays based on requests.
- Assisted CAT member in download the new version of IDLVM viewer from web page, now viewer is working for his Linux machine at home.

XOR-4:

- Installed and tested EPICS support for Stanford SR400 photon counter in sector 4 lab.
- Implemented the SR400 photon counter support in ioc4idd. Helped with initial testing and followed up with users who verified that the EPICS support was working correctly while taking real data.
- Installed CCD Image Server for David Paterson in sector 4.

MHATT-CAT - Sector 7:

- Assisted Dohn Arms from Sector 7 to resolve the problem of accessing scanSee IDLVM version on their machine. They tried a 4D scan which scanSee can not handle yet, currently scanSee can handle up to 3D scan. I am thinking of expanding scanSee to support 4D scan in near future.
- Designed a 4-channel TTL driver, using TTL <-> differential chips. Constructed, tested and delivered two proto-boxes (driver & receiver)

IMMY-CAT - Sector 8:

- Discussed possible solutions for reading linear pots with Alec Sandy Recommended duplicating the sector 2 & 3 approach.
- MultiTau cluster
 - Had discussions with Mark Sutton about the plan for parallelization.
 - Completed C++ classes for performing autocorrelations and worked on test programs and data to verify the algorithm works and is well understood.
 - Ported all code to Linux.
 - Provided Mark Sutton with a C callable version of the classes with the goal of trying to integrate them directly into Yorick for a more complete comparison of performance and accuracy of the algorithm. This is also the first attempt to try and get something immediately usable by their user base.
 - Made a “first cut” parallel program to perform multitau. So far, the program can split the data up into chunks based on information provided in a masking image, pass the data out to numerous client processes, and crunch the data. Thus far the data can not be entered or retrieved in a user friendly format, but enough of the general skeleton is there to start getting an idea about performance.
- E Station
 - Installed necessary hardware/software into the D/E station EPICS crate to support micro-diffraction experiment.
 - 2x OMS VME58-8
 - 1x OMS VME58-4E
 - IP Carrier (VIP626)
 - 2x IP-Octal (RS232)
 - 1x IP-Unidig (Digital I/O)
 - New Focus PicoMotor Motor Record driver development.
 - Keithley Electrometer interface development (Serial Database)
- I Station
 - Worked with A. Sandy on selection of a new servo motor controller for two Nanomotion motor stages that will be used in a new vacuum ready monochromator. The ACS-Tech80 controller was recommended by the vendor and I agreed to implement an Ethernet based driver for it. This work will be completed during Dec-Jan shutdown.

BIOCAT – Sector 18:

- Helped David Gore (BIO-CAT) port Tom Coleman's pmac support to 3.14.

GM/CA – Sector 23:

- Talked with Alex U. from sector 23 about implementing a C++ version of CA. Both he and I already have C++ implementations that are fairly similar and so we discussed what we've learned and the possibility of combining efforts and making a supported package.
- Debugging IOC crashes caused by Koyo PLC communication using DirectNet Epics drivers. Working with offsite consultant Chitra and Sergey Stepanov.

NANOCAT – Sector 26:

- Spent a couple of days during the nanoprobe experiment to help sort out problems and plan for how the control system should be designed to allow the users to do what they want.
- Moved nanoprobe workstation and controls crate to sector 8 and tested that all worked fine.
- Spent some time cleaning up the controls and login scripts.
- Labeled cables, hunted down some missing hardware, tidied up some of the cabling.
- Hooked the nanoprobe crate processors into the terminal server in sector 8.
- Got the sdds tools to function without too much headache for the user so we could do data trending.
- Configured and tested the nanoprobe account so that the nanoprobe could be controlled from the linux workstation in sector 8. In the future, I hope not to need to move the workstation.
- Researched some relative humidity, barometric pressure and thermocouple signal transducers for use with the nanoprobe.

UNICAT – Sector 33:

- Assisted user in setting up EPICS support for a temperature controller
- Helped Andrei Tkachuk get started in using Igor to control the CCD Image Server through EPICS.

XOR:

- Assisted Felix Krasnicki from X ray Metrology Lab in getting familiar with using viewer to generate ASCII report
- Assisted with motor testing in the XFD deposition lab
- Fixed limit switch problems in XFD Topo lab
- Investigated/fixed limit switch issues in M. Erdmann's lab (cryo tilt stage)
- Helped Felix Krasnicki with using the CCD Image Server and how to use it. Tried to help understand some of the features he's seeing in his data. Helped find tools to view the image files and help with making presentations.

General

Upgrade 2D ROI programs

- Modified scan2d_overlay.pro such that it also works for 24 bit devices and fixed the PS plot output
- Fixed the color table not defined problem in PS_init of PS_open.pro taking care the calling program is not properly started
- Modified scan2d_roi.pro and multiroi_pick.pro such that it also works for 24 bit devices
- Modified save TIFF/PNG/PICT in multiroi_pick.pro to support 8/24 bit devices
- Fixed the problem in continually displaying the query image value in the graphic area

H5B/HDFB Browser

- Modified HDFB.pro to handle HDF5 data file, if hdf5 file detected then the h5b_sds subprogram from h5b.pro will be called
- Worked on h5b browser for HDF release 5 data format, if hdf4 file detected then the hdfb program will be called directly by h5b
- For multiple SDS data set # selection dialog:
 - Added code for checking input error for the first # entered for multiple 1D arrays
 - Added code for checking input error for the first # entered for multiple 2D arrays
 - Added valid dimension checking for remaining input seq # based on dimension of the first entry.

Gateway System

- Updated SDDS, SDDSepics tools on epicscat/gateway for Linux and linux-x86, now SDDSepics tools should be accessible from gateway.
- IDLVM on the gateway for the Linux system has been updated
idlvm <pname>
where <pname> can be
sscan - 1D/2D/3D scan displayer up to 85 detectors for mda files
SB2 - a post scan data displayer for sscan mda files
catcher - 1D/2D scan data displayer and saver up to 15 detectors
viewer - a post scan data displayer for catcher
hdfb - HDF4 data browser
h5b - HDF5 data browser
img - an tiff/jpeg/jpng/xdr image processor

BEAMS Server

- Installed SDDSepics tools on beams server for bin/solaris, now beams user should be able to access SDDSepics tools by default.
- Updated newest IDL/visualization tools in both solaris and solaris-sparc directories in /usr/local/epics/extensions/bin. This new set of visualization tools now support true color graphics.

- A complete set of extensions tools built with EPICS R3.14.5 have been installed on bin/solaris-sparc on beams server. Users are welcomed to try access this new set of extensions tools on beams server.

Setup requirement for access solaris-sparc extensions tools:

```
setenv EPICS_HOST_ARCH solaris-sparc
set path=($EPICS_EXTENSIONS/bin/solaris-sparc $path)
```

OXYGEN Server

- Committed all modified IDL programs to CVS control
- Created all new sav files from IDL 6.0
- Created new IDL catcher3_1.tar and idl_3.1.zip file
- Janet Anderson installed newest EPICS/IDL visualization tools on OXYGEN and HELIOS.
- Performed visualization system test for OXYGEN system

Notes for IDL COLOR Mode

- Now all EPICS/IDL visualization tools supports both pseudo or true color devices. In true color mode, each window has its own color, in pseudo color mode all windows share same color table.

Hardware

- Field tested new "Lite" transition board in sector 1
- Added several feature sheets to hardware device database
- Packaged up and sent off a BC5 transition board to Ian Gillingham at Diamond Light Source.

HDF support

- Fixed a bug in a program I wrote to convert the images in HDF format into 16bit TIFF format.

Access Grid

- Kept pingning computer support with emails and trying to show up in their office to make sure they know we still care...

eBrick

- Upgraded some of the EPICS components I was running to base 3.14.6. I still have a problem with performance of asyn that will need to be resolved soon.

LEUTL

- Fixed a couple of minor problems with one of the LEUTLCCD camera systems.

Motor Support

- Delta Tau has fixed the "memory aliasing" problem with their VME based PMAC motor controller. Once the PMAC board has been returned and the solution is confirmed, this problem will be (at long last) be resolved.

- OMS MAXv device driver development is near complete. This device driver will be available with the next motor record release (i.e., R5-4).

User office

- Wrote TMS content for user office web page.

synApps

- Translated all databases in autosave and calc modules to vdct. VDCT's external link seems broken; it names the link field on both sides of the link. (Fixed in version 2.4.1250.)
- Added genSub module to synApps_5_1. Removed the genSub record from the calc module.
- Ported Eurotherm device support to asyn.
- Put tar files of externally developed (and sometimes locally modified) modules needed by synApps in the CVS repository, so everyone can work from the same support.
- Ported serial_OI_block and GPIB_OI_block databases and medm displays to asyn. Combined into one set and renamed as deviceCmdReply. Replaced generic serial and GPIB support displays with asynRecord displays.
- Rewrote IOC_status.adl (replacing the quick stab I wrote when the vxStats module came in with edm-only support).
- Updated sscan- and calc-module release notes and docs.
- Added '-' and '|-' binary operators ('subtract' first/last occurrence of substring) to string calcs.
- Wrote a set of medm-displays to list and demonstrate every calc and stringCalc function, operator, and constant ("calcExamples.adl"). Updated medm displays that contain calc fields to call up this doc.

SLAC

- Worked with Harvey Rarback and Stephanie Allison (SLAC) to initialize a motor record with an external encoder (RDBL). There are two problems: 1) The encoder isn't, in general, ready to be read at PINI time; and 2) The motor record's URIP field isn't doing what it should.

Problem (1) is effectively the same problem Jonathan Lang ran into trying to initialize link fields from a stringCalcout record, and has the same solution: use a periodically scanned sequence record to trigger the initialization. This ensures that initialization is delayed until all participants are ready. As the last step of the initialization, the sequence record sets its own SCAN field to "Passive", ensuring that initialization happens only once.

Stephanie fixed problem (2), and we sent her fix to Ron Sluiter.